SHAWN HIEW, PhD

Postdoctoral Researher

Institute for Psychology, University of Bern

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A Holligenstrasse 17, 3008 Bern.

- Awarded PhD in Cognitive Neuroscience (magna cum laude)
- DAAD scholar on the Elite Bavarian Network Masters programme
- Multiple peer-reviewed publications in high impact scientific journals and participations in international scientific conferences

RESEARCH SKILLS

Imaging
MRI safety trained at Bangor University and Department of Neuroradiology, University Hospital of Würzburg
Functional and structural MRI processing and network analysis with FSL, SPM and LeadDBS
Experienced with EEG

Non-Invasive Brain Stimulation
Experienced with tDCS and TMS
Experienced with SimNIBS and Brainsight

Gait
Experienced with inertial and pressure sensors and EMG

Statistics
Experienced with SPSS, R, MATLAB and Graphpad Prism

Programming
Experienced with MATLAB and Python in MacOS and Ubuntu environments

EDUCATION& EMPLOYMENT

Institute for Psychology, University of Bern
Postdoctoral Researcher
October 2023 - Present

Project: Memory Trace:

- Tracing the formation and consolidation of episodic memory formed both consciously and unconsciously in healthy young subjects and patients with amnesia using fMRI and MR spectroscopy.
- Boosting memory consolidation by tDCS.
- Co-teaching the Masters of Psychology seminar 'Between learning and retrieval'.

Department of Neurology, University Hospital Würzburg
PhD Cognitive Neuroscience (magna cum laude)
January 2021 - September 2023

Thesis title: Imaging the Spin: The network underlying mental rotation

- Identified the network proposed to underly mental rotation using coordinate-based network mapping. This was presented at the ICCN 2022 in Geneva, and is published (Hiew et al., Neuroscience and Biobehavioral Reviews, 2023).
- Validated this network by interference with TMS to network nodes in healthy young adults. This network was successfully validated and the abstract has been accepted for presentation at the DGKN conference 2023. The manuscript is in preparation.
- Tested the effect of coil positions optimized by electrical field modelling, compared to unoptimized coil positions on mental rotation performance.
- Further validated the network node and identified its task related oscillation by a neural entrainment protocol using rTMS.
- Identified a causal directional network for mental rotation using causal modelling.
- Measured brain activations and performance on mental rotation using fMRI in the different types of focal dystonias and Parkinson's disease. This manuscript is in preparation.

Locomotor Adaptation

- Identified a link between physical activity and aging on locomotor adaptive reserve by analysing gait patterns of individuals across the lifespan (Hiew et al., Brain Sciences, 2023)
- Identified links between a motor reserve and regional brain volumes and resting-state functional connectivity using measures of physical activity history, gait symmetry measures from a locomotor adaptation task and performance measures from a visuomotor adaptation task. The findings were presented at DGKN 2022.

Lesion Network Mapping

- Identified the functional network linked to convergence nystagmus by lesion symptom mapping.

Voxel-based Morphometry

- Comparing the combined effects of gadolinium-based contrast agent and pipeline on estimated tissue volume

Department of Neurology, University Hospital Würzburg   October 2018 – December 2020
MSc Translational Neuroscience, Awarded with Distinction (1.2)

Thesis: The effects of the timing of tDCS on motor learning and consolidation (Prof Dr. Daniel Zeller, University Hospital Würzburg)
- Investigated the effects of applying cerebellar tDCS before, during and after a motor learning task on consolidation. The findings are now published (Nguemeni et al., Front, 2021)
Lab rotations:
- Set-up EEG for a tactile brain computer interface experiment
- Applied cerebellar tDCS to patients with multiple sclerosis to improve consolidation on a locomotor adaptation task. Collected data using pressure insoles, EMG and inertial sensors. Evaluated their gait symmetry patters during the locomotor adaptation task. The findings are now published (Nguemeni et al., Front., 2020)
Internships:
Department of Neurology, University Hospital of Würzburg
- Analysed gait symmetry measures of patients with Multiple Sclerosis from pressure insoles, bluetooth electromyography and inertial sensors from a locomotor adaptation task using SPSS
- Supported the preparation of the manuscript by creating figures using Graphpad Prism and drafting the introduction, results and discussion session
Department of Neuroradiology, University Hospital of Würzburg
- Performed lesion segmentation of T2-weighted MR images from Multiple Sclerosis patients in order to evaluate the effect of lesion load on locomotor adaptation. The findings are now published (Nguemeni et al., Front., 2020)

School of Psychology, Bangor University   September 2015 – July 2018
BSc Psychology with Neuropsychology (Hons), Degree Classification: 1st

Thesis: Force Production Without Feedback: Implications for Defining AMT Using TMS (Dr. Ken Valyear)

Methodist College Kuala Lumpur   January 2014 – July 2015
Cambridge International A-Level, Biology (A*), Chemistry (A*), Mathematics (A), Literature in English (B)

PUBLICATIONS

Hiew, S., Roothans, J., Eldebakey, H., Volkmann, J., Zeller, D. & Reich, M. (2023) Imaging the spin: Disentangling the core processes underlying mental rotation by network mapping of data from meta-analysis. *Neuroscience and Biobehavioral Reviews 150187.*

Hiew, S., Eibeck, L., Nguemeni, C., & Zeller, D. (2023). The influence of age and physical activity on locomotor adaptation. *Brain sciences*, *13*(9), 1266.

Odorfer, T., Yabe, M., Hiew, S., Volkmann, J. & Zeller, D. (2023). Topological differences and confounders of mental rotation in cervical dystonia and blepharospasm. *Scientific Reports.*

Hiew, S., Nguemeni, C., & Zeller, D. (2022). Efficacy of transcranial direct current stimulation in people with multiple sclerosis: a review. *European Journal of Neurology*, *29*(2), 648-664.

Nguemeni, C., Hiew, S., Kögler, S., Homola, G. A., Volkmann, J., & Zeller, D. (2022). Split-Belt Training but Not Cerebellar Anodal tDCS Improves Stability Control and Reduces Risk of Fall in Patients with Multiple Sclerosis. *Brain sciences*, *12*(1), 63.

Nguemeni, C., Stiehl, A., Hiew, S., & Zeller, D. (2021). No Impact of Cerebellar Anodal Transcranial Direct Current Stimulation at Three Different Timings on Motor Learning in a Sequential Finger-Tapping Task. *Frontiers in Human Neuroscience*.

SCIENTIFIC ACTIVITIES

Transcranial Brain Stimulation: From Basics to Advanced Applications, Neuroimaging Center, University Medical Center Mainz (2021)

Poster presentations

- German Congress for Clinical Neuroscience, Würzburg (DGKN 2022)
- International Conference for Clinical Neurophysiology, Geneva (ICCN 2022)
- German Congress for Clinical Neuroscience, Hamburg (DGKN 2023)

VOLUNTEER

2017-2018
Smallpeice Trust
Residential supervisor
Supervised children aged 13-17 during residential STEM summer courses. Supported children on the autism spectrum and with special needs including disabilities, eating disorders and anxiety.

2017
Headway Cardiff
Supported patients recovering from brain injury

2014
Mobile Medical Clinic
Malaysian Association for the Blind

2011
Soup Kitchen
Blood Donation Drive

AWARDS

2023
DGKN 2023 Poster Prize
Member of the German Society for Clinical Neurophysiology

2022
Graduate School of Life Sciences Travel Fellowship
International Congress for Neurophysiology Travel Fellowship

2019-2020
DAAD Scholarship for Graduates of all Disciplines

2015-2018
Bangor University International Merit Award

2014-2015
Methodist College Kuala Lumpur Merit Award

OTHER SKILLS

Communication
Able to confidently communicate with people with a wide range of needs

Teamwork
Experienced in working in teams with social workers, volunteers and academics and researchers from a wide range of academic backgrounds

Languages
English (native), German (Intermediate), Malay (Intermediate)

INTERESTS

MUSIC – I was awarded Level-4 Diploma in Piano Performance by Trinity College London and played flute in the school concert band. I now enjoy playing ukulele and guitar.

LANGUAGE – I enjoy partaking in language exchange

SPORT – I enjoy weightlifting and hiking.